REMARKS

Claims 29-32, 36-39, 43, 44, 46-53, 59 and 62-67 are pending.

By the present amendment, claims 33-35, 40-42 and 45 are canceled. Claims 1-28, 54-58, 60 and 61 were previously canceled.

Claims 36-39, 43 and 44 are amended to depend from claim 29, claim 53 is amended to depend from any one of claims 29, 37-39 or 51, and claim 59 is amended to depend from any one of claims 29, 37-39 or 46.

Claims 63-70 presented in Amendment C and Response to Final Office Action dated December 4, 2009, were not entered by the Office. The five newly presented dependent claims are therefore numbered as claims 63-67. Claims 63 and 66 depend from claims 29 and 46, respectively, and are directed to a pyridine analog Markush group consisting of triclopyr, fluroxypyr, dithiopyr, thiazopyr and picloram, thereby excluding clopyralid from the scope of the claims. Support for claims 63 and 66 is provided at page 11, lines 23-27 of the specification as filed. Claims 64, 65 and 67 restrict the scope of claims 63, 46 and 66, respectively, to a weight ratio of glyphosate to pyridine analog of from about 8:1 to about 20:1. Support for claims 64, 65 and 67 is provided by claim 36 and by the specification as filed at page 20, lines 14.

Applicants acknowledge the withdrawal of the rejection of claims 29, 33, 37-39, 42, 49 and 50 under 35 U.S.C. §112, second paragraph.

Non-Statutory Obviousness-Type Double Patenting Rejections

Applicants note the provisional obviousness-type double patenting rejections over co-pending applications 11/368,872, 11/227,577 and 11/438,573. The merits of the rejections will be addressed at such time when the present application is indicated to contain allowable subject matter.

Rejection Under 35 USC §103

Claims 29-53, 59 and 62 are rejected under 35 USC §103(a) as being obvious over Hacker et al. (US 6,677,276 B1), Brigance (US 2002/0155953 A1) and Jimoh (US 2003/0004063 A1).

The rejection of claims 33-35, 40-42 and 45 is rendered moot by the present amendment.

Applicants respectfully submit that the Office has failed to establish a *prima facie* case of obviousness, and claims 29-32, 36-39, 43, 44, 46-53, 59 and 62, as well as new claims 63-67, are non-obvious over the combination of Hacker, Brigance and Jimoh.

I. The present invention

Glyphosate is very effective in killing or controlling the growth of unwanted plants. However, glyphosate uptake (i.e., absorption) by the plant and translocation through the plant is relatively slow. Thus, visual symptoms that a plant has been treated with glyphosate may not appear until one week or more after application to the plant. See the specification at page 1, lines 14-25.

The problem solution of the present invention is directed to combining a pyridine analog herbicide (or a salt or ester thereof) with glyphosate (or a salt or ester thereof), glyphosate being in excess at a ratio of 7.6:1 (claim 29) or 7:1 (claim 46) in order to achieve one of the objects of the present invention of obtaining both early symptoms of plant treatment that are associated with the pyridine analog herbicide and prolonged control of the plant associated with glyphosate (see the specification at page 1, lines 6-13, and page 12, lines 2-8). Early symptoms of plant treatment are visible in 4 days or less after treatment (see the specification at page 19, lines 5-9). Problematically, the prior art teaches that pyridine analog herbicides can be antagonistic and can reduce the herbicidal activity of glyphosate or a herbicidal derivative thereof (see the specification at page 19, lines 10-12). In accordance with the present invention, it has been discovered that combining glyphosate in a weight percent acid equivalent ("a.e.") excess over the pyridine analog herbicide overcomes the antagonism problem and provides enhanced early symptoms of herbicidal efficacy for the combination of herbicides as compared to what would be expected from the additive effect of the herbicides individually applied. The present invention therefore allows for early plant kill, increased herbicidal efficacy and lower herbicide application rates for the claimed combination as compared to the herbicides applied individually. Lower herbicide application rates result in cost savings and less unwanted environmental exposure.

As made of record in the Office action response filed October 23, 2008, Applicants have discovered that the claimed co-herbicide combination provides enhanced early symptoms of herbicidal efficacy.

Applicants wish to further make of record that analysis of the present working examples further show an additive effect (i.e., no antagonism) for some claimed combinations of glyphosate and a pyridine analog herbicide. An additive effect is shown where the actual efficacy for an herbicide combination is equal to the expected efficacy as calculated by the Colby method from applications of the herbicides individually. In view of the prior art teaching that pyridine analog herbicides can be antagonistic and can reduce the herbicidal activity of glyphosate, an absence of antagonism of the claimed compositions would have been expected to one of skill in the art.

The analysis was restricted to compositions F4C, F0C , RU1 and BBG having approximately equal application rates of glyphosate and pyridine analog, both individually and in combination, in order to provide a comparative basis for the Colby calculation. Formulation F4C, diluted at a rate of 6 ounces per gallon, had a diluted application concentration of 0.62 weight percent a.e. (wt% a.e.) glyphosate and 0.14 wt% a.e. triclopyr. Formulation F0C contained only glyphosate, was diluted at a rate of 6 ounces per gallon, and had a diluted application concentration of 0.62 wt% a.e. glyphosate. Formulation RU1 contained only glyphosate, was diluted at a rate of 6 ounces per gallon, and had a diluted application concentration of 0.93 wt% a.e. glyphosate. Formulation BBG contained only triclopyr, was diluted at a rate of 4 ounces per gallon, and had a diluted application concentration of 0.18 wt% a.e. triclopyr.

A summary of the experimental examples demonstrating surprising results of additive or synergistic efficacy is presented the table below where "Table" refers to an example presented in the present application, "wt% a.e. gly" and "wt% a.e. tric. refer to the glyphosate and triclopyr concentrations in the application mixtures, and Expected %Control is calculated by the method of Colby from individual applications of glyphosate and triclopyr.[1]

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[1] See Colby, S.R., "Calculating synergistic and antagonistic response of herbicide combinations," Weeds, 15, 20-22, 1967. The Colby method is widely accepted by those skilled in the art as a method for determining whether herbicide combinations show antagonism or synergy. Under the Colby method, the expected efficacy for a herbicide combination is calculated from the efficacy of those herbicides applied individually according to the equation:

$$E = X + Y - XY/100$$

where E is the expected herbicidal efficacy, X is the percent inhibition of growth by herbicide A (i.e., glyphosate) and Y is the percent inhibition of growth by herbicide B (i.e., triclopyr). For Maple from table 3.2A of the instant

Table	Form.	wt% a.e. gly	wt% a.e. tric.	Plant species; %Control; DAT	Expected %Control	Result
3.2A	F4C	0.62	0.14	Maple; 58; 5	-----	
	F0C	0.62	----	Maple; 10; 5	56.8	No antagonism
	BBG	----	0.18	Maple; 52; 5		
3.2A	F4C	0.62	0.14	Oak; 45; 5	-----	
	F0C	0.62	----	Oak; 3; 5	49	No antagonism
	BBG	----	0.18	Oak; 48; 5		
4.4.1	F4C	0.62	0.14	Poison Ivy; 95; 5	----	
	RU1	0.94	----	Poison Ivy; 80; 5	93	No antagonism
	BBG	----	0.18	Poison Ivy; 86; 5		
4.4.1	F4C	0.62	0.14	Fesc/Blue; 90; 5	----	
	RU1	0.94	----	Fesc/Blue; 50; 5	75	Synergy
	BBG	----	0.18	Fesc/Blue; 50; 5		
4.4.1	F4C	0.62	0.14	Golden Rod; 90; 5	----	
	RU1	0.94	----	Golden Rod; 50; 5	70	Synergy
	BBG	----	0.18	Golden Rod; 40; 5		

Comparison of expected %control for glyphosate+triclopyr calculated from the efficacy for separate glyphosate and triclopyr application versus actual control for formulation F4C (containing glyphosate and triclopyr) indicates either lack of antagonism (where expected and actual control are approximately equal) or synergy (where actual control exceeds expected control) for the trials summarized in the table.

II. Claims 29-32, 36-39, 43, 44, 46-53, 59 and 62, and new claim 65, are non-obvious over the combination of Hacker, Brigance and Jimoh

1. Hacker

Hacker would not have provided a reason to make the dual selection of (i) glyphosate and a pyridine analog wherein (ii) the weight ratio of glyphosate (a.e. basis) to pyridine analog herbicide (a.e. basis) is greater than 7.6:1 (claim 29) or 7:1 (claim 46) with any reasonable expectation of success.

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application, an expected efficacy (E) of 56.5 is calculated from the individual efficacies as follows: (10 + 52) - (10)(52)/100 = 56.8.

(1) Hacker does not teach, suggest, attach any importance to, or provide any reason or motivation to make the instantly claimed ratio of glyphosate to pyridine analog herbicide of at least 7.6:1 (claim 29) or 7:1 (claim 46)

The herbicides arts are unpredictable and biological incompatibility frequently occurs. Hacker acknowledges unpredictability at column 1:45-49 stating that biological incompatibility and lack of stability of a coformulation occurs "not infrequently." Jimoh (discussed in detail below) recognizes and demonstrates incompatibility of oil soluble herbicides in aqueous compositions at paragraph [0006] and Example 11. Likewise, the present application discloses that the prior art teaches that the presently claimed pyridine analog herbicides can be antagonistic and can reduce the herbicidal activity of glyphosate or a herbicidal derivative thereof (see the specification as filed at page 19, lines 10-12).

Hacker broadly discloses synergy for the combination of 4 different classes of Group A herbicides and 6 different classes of Group B herbicides[2] encompassing over 40 herbicide species, but does not present any experimental evidence to support synergy for glyphosate compositions, much less glyphosate in combination with a pyridine analog herbicide as is instantly claimed. Importantly, the very broad Hacker disclosure fails to recognize that the instantly claimed pyridine analog herbicides can be antagonistic to the herbicidal activity of glyphosate.

Hacker describes a weight ratio of water-soluble herbicide to oil-soluble herbicide of from 2000:1 to 1:250, most preferably 60:1 to 1:20. Hacker's broad disclosed range would have created an expectation of enablement over that entire range. Hacker therefore teaches that an excess of pyridine analog herbicide to glyphosate from 1:1 to 20:1, or as much as 250:1, (ranges that are excluded from the scope of the pending claims) are suitable for the practice of the invention.

Problematically, Hacker does not provide any guidance, or present any working examples, for the selection of a ratio of glyphosate to pyridine analog herbicide that avoids

[2] Group A herbicides include glufosinate (a glutamine synthetase inhibitor); glyphosate (an enolpyruvyl shikimate-3-phosphate (EPSP) synthase inhibitor); imidazolinones (acetolactate synthase (ALS) or acetoydroxy acid synthase (AHAS) inhibitors); and pyraflufen, carfentrazone, oxadiargyl and sulfentrazone (protoporphyrinogen (PPO) inhibitors). Group B herbicides include metazochlor, trifluralin, naproamide and carbetamide (mitosis inhibitors); clomazone, (carotenoid biosynthesis inhibitors); dimefuron and pyridate (photosystem II inhibitors); clopyralid (synthetic auxins); ethametsulfuron-methyl (acetolactate synthase (ALS) or acetoydroxy acid synthase (AHAS) inhibitors); quizalofop, fenoxaprop, fluazifop, haloxyfop, propaquizafop, sethoxydim, cycloxydim and clethodim (acetyl CoA carboxylase (ACCase) inhibitors.

antagonism as required by the present claims. The disclosure that herbicides can be combined in any weight ratio over a range of 60:1 to 1:20 leaves the critical instantly claimed antagonism-avoiding ratio uncertain and requires guess work. That uncertainty is compounded by (i) Hacker's complete absence of glyphosate-pyridine analog working examples, (ii) the unpredictability in the art, (iii) the express incompatibility teaching of Hacker and Jimoh and (iv) what is known to those skilled in the art regarding glyphosate-pyridine analog antagonism when the pyridine analog is in weight percent excess.

Hacker does not provide adequate direction or guidance that would enable one skilled in the art to select the instantly claimed weight ratio of glyphosate to pyridine analog herbicide of at least 7.6:1 as required by claim 29, or at least 7:1 as required by claim 46, much less ratios of 8:1 to 15:1 as required by dependent claim 32 and 8:1 to 20:1 as required by dependent claims 36, as well as new claims 64, 65 and 67. Where the claimed invention involves unpredictable technology, the specification must provide those skilled in the art with a specific and useful teaching.[3] The only guidance provide by Hacker is to formulate glyphosate and the pyridine analog species clopyralid in a weight ratio of from 2000:1 to 1:250, preferably from 1000:1 to 1:150, more preferably from 200:1 to 50:1, most preferably from 60:1 to 1:20. Hacker therefore only provides a starting point for further research experimentation, but would not have provided a reason for one skilled in the art to select the instantly claimed ratios with any expectation of success.

In view of the inadequate guidance provided by the Hacker specification, the unpredictability in the art, Hacker's suggestion of incompatibility, and what is known to those skilled in the art regarding glyphosate-pyridine analog antagonism, one skilled in the art would not have known and would not have predicted with any reasonable expectation of success, whether a composition is synergistic (or lacks antagonism) until the efficacy of the individual herbicides (glyphosate and a pyridine analog) and a mixture thereof are evaluated. Therefore, one skilled in the art would have looked to Hacker's examples for guidance.

Hacker presents experimental data in Tables 2-5 at columns 19 and 20 purportedly showing synergism for various herbicide combinations including glufosinate and metazochlor (Table 2); glufosinate and carbetamide, and glufosinate and dimefuron (Table 3); various

[3] *Genentech, Inc. v. Novo Nordisk A/S*, 108 F.3d 1361 at 1367-68 (Fed. Circ. 1997).

combinations of 2 and 3 co-herbicides including glufosinate, but not including pyridine analog herbicides; and glufosinate and ethametsulfuron, and glufosinate and clopyralid (Table 5). No examples for the combination of glyphosate and a pyridine analog are given which would provide any guidance whatsoever for a weight ratio that provides synergy or a lack of antagonism for that combination.

Noting that glyphosate is a phosphoherbicide, one skilled in the art could have looked to the Table 5 combination of glufosinate (a phosphoherbicide) and clopyralid (a pyridine analog) for guidance to, or suggestion of, pyridine analog herbicide synergy in combination with a phosphoherbicide. **Analysis of Table 5 shows that no synergy teaching can be inferred for the combination of the phosphoherbicide glufosinate and the pyridine analog herbicide clopyralid at a weight ratio of 2.3:1 as applied to *Cirsium arvense* plants, and that combination is antagonistic on *Chenopodium album* plants.** In particular:

Table 5 reports the application of a composition containing a weight ratio of glufosinate (a.e.) to clopyralid (a.e.) of 2.3:1[4] to *Cirsium arvense* and *Chenopodium album* plants. On *Cirsium arvense*, E^C (expected synergy by the Colby method) was calculated to be 98% and the actual control was 100%. One skilled in the art would understand that synergy cannot be shown where essentially complete control is expected because a showing of synergy would require actual control to be greater than 100%, which is impossible. Therefore the *Cirsium arvene* results would not have provided any synergy guidance to one skilled in the art. Further, because 100% control was achieved, it follows that an excess of herbicide was applied and it is likely that any antagonistic effects would have been masked.

Turning to the Table 5 *Chenopodium album* data, Hacker reports only an estimated E^A for the combination of glufosinate and clopyralid at the weight ratio range of 2.3:1. E^A is defined at column 18:61 as the "total of the herbicidal actions of the individual applications," but it is not clear from the specification how that term is calculated. Apparently E^A represents the sum of the efficacies resulting from individual

[4] Calculated as follows: (230 grams active substance (a.i.) glufosinate-ammonium)(0.91 a.e./a.i) / (90 grams clopyralid a.e.) = 2.3:1.

application of the herbicides.[5] Accordingly, the E^A of 80 reported at column 20:25 for glyphosate and clopyralid must be incorrect. Instead, that E^A would be 140% calculated as the sum of glufosinate-ammonium control of 90% (column 20:21) and clopyralid control of 50% (column 20:24). An E^A of 140% is meaningless, as well as impossible, and could not have provided one skilled in the art with any estimation or suggestion of synergy whatsoever. A Colby expected efficacy (E^C) of 95% was calculated from the individual glufosinate and clopyralid control percentages.[6] Comparison of the actual *Chenopodium album* control of 85% (column 20:24) versus an expected E^C of 95% teaches that glyphosate and clopyralid at a weight ratio of 2.3:1 are **antagonistic**.

Hacker's experimental data provides objective evidence that pyridine analog herbicides can be antagonistic when combined with a phosphoherbicide, thereby demonstrating unpredictability. Under case law precedent, that unpredictability should be afforded significant weight against obviousness of the claimed compositions.[7]

A prior art reference must be considered in its entirety, including portions that would lead away from the present invention.[8] In view of the inadequate guidance provided by the Hacker specification for glyphosate to clopyralid weight ratios, a suggestion of antagonism associated with the combination of clopyralid and phosphoherbicides, and the unpredictability in the art, it would not have been obvious to select the instantly claimed herbicide ratio.

(2) The breadth of the Hacker disclosure would not have motivated, or provided a reason, for one skilled in the art to make the dual selection of (i) glyphosate and a pyridine analog herbicide at (ii) a weight ratio of at least 7.6:1 or 7:1

Hacker describes a large number of herbicide combinations for control of harmful plants in herbicide-tolerant oil-seed rape crops. Hacker describes combinations of "Group A" herbicides and "Group B" herbicides wherein columns 5-8 list 15 Group A herbicides (including glyphosate) and 20 Group B herbicides (including clopyralid) representing 17 separate herbicide

[5] See Table 5 *Cirsium arvense* data where E^A is shown to be 85 (column 20:23) which must be the sum of (B2.4) ethametsulfuron-methyl control (reported at column 20:22 as 0%) and (A1.2) glufosinate-ammonium control (reported at column 20:21 as 85%).

[6] Colby synergy (E^C) = 50 + 90 - (50)(90)/100 = 95%.

[7] Unpredictability in the insecticide field, with homologs, isomers and analogs of known effective insecticides, having proven ineffective as insecticides, was considered as a factor weighing against a conclusion of obviousness of the claimed compounds. *In re Schechter*, 205 F.2d 185, 191, 98 USPQ 144, 150 (CCPA 1953).

[8] *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984); MPEP §2141.03 VI.

genera. From that listing, a total of 150 two component herbicide combinations are possible. Column 9, line 46 to column 10, line 3 lists 57 preferred herbicide combinations, while column 10:46-64 list another 40 preferred herbicide combinations. Hacker provides no glyphosate working examples and therefore does not attach any particular importance to glyphosate compositions. Hacker therefore would not have provided a reason for one skilled in the art to select the claimed composition from among the 40 preferred combinations.

Nor, as explained above, would Hacker have further led one skilled in the art to select the claimed weight ratio of glyphosate to pyridine analog herbicide for the purpose of overcoming antagonism. In view of Hacker, one skilled in the art would not have a reason to make the dual selection of (i) the specific combination of glyphosate and clopyralid and (ii) formulate that combination at the claimed weight ratio (iii) for the purpose of avoiding herbicidal antagonism with any reasonable expectation of success.

(3) Inherency cannot serve as the basis for an obviousness rejection

In the Advisory Action dated December 18, 2010, the Office asserts that the compositions taught by Hacker (and Jimoh and Brigance) "comprise the same components as instantly claimed and would thus inherently overcome glyphosate-pyridine analog antagonism to achieve both early plant control symptomology and long term plant control." However, well established case law holds that inherency and obviousness are distinct concepts, and inherency cannot serve as the basis for an obviousness rejection.[9] As stated in *Spormann*, "what is unknown cannot be obvious." Therefore the claims cannot be obvious over Hacker under the doctrine of inherency.

(4) Claims 29-32, 36-39, 43, 44, 46-53 and 59 are non-obvious over Hacker

In summary, Hacker does not teach, suggest or attach any importance to, or provide any reason to, make the instantly claimed dual selection of (i) glyphosate and a pyridine analog herbicide at (ii) a weight ratio of 7.6:1 or 7:1 for the purpose of overcoming herbicidal

[9] Inherency and obviousness are different concepts and "[o]bviousness cannot be predicated on what is not known at the time an invention is made, even if the inherency of a certain feature is later established." MPEP §2141.02.V citing *In re Rijckaert*, 9 F.2d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993). See also *In re Shetty*, 566 F.2d 81, 86, 195 USPQ 753, 756 ("inherency is quite immaterial if ...one of ordinary skill in the art would not appreciate or recognize that inherent result.") and *In re Spormann*, 363 F.2d 444, 448, 150 USPQ 449, 452 ("the inherency of an advantage and its obviousness are entirely different questions. That which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown.").

antagonism with any expectation of success. Even if it could be said that the broadly described Hacker compositions would inherently overcome antagonism, that result was unknown in view of the art, and obviousness cannot be based what is unknown. Claims 29-32, 36-39, 43, 44, 46-53 and 59 are non-obvious over Hacker.

(5) Claim 62 is non-obvious over Hacker

Hacker would not have provided a reason to make the dual selection of (i) glyphosate and a pyridine analog herbicide for (ii) killing or controlling the plant specie required by claim 62 with any expectation of success. As explained above, the breadth of Hacker's disclosure, the absence of glyphosate-pyridine analog working examples, the express incompatibility teaching of Hacker and Jimoh, Hacker's example showing incompatibility between a phosphoherbicide (glufosinate) and the pyridine analog herbicide clopyralid, in combination with the unpredictability in the art, would not have motivated one skilled in the art to select the claimed herbicide combination from among the 40 preferred combinations disclosed therein with any expectation of success.

Hacker further fails to describe any of the plant species required by claim 62 or suggest that glyphosate and a pyridine analog herbicide would be effective for control of those species. In view of Hacker therefore, one skilled in the art would not have a reason to make the dual selection of (i) glyphosate and clopyralid for (ii) killing or controlling the claimed plant specie with any expectation of success. Claim 62 is therefore non-obvious over Hacker.

2. Jimoh

Jimoh, like Hacker, would not have provided a reason to make the dual selection of (i) glyphosate and a pyridine analog wherein (ii) the weight ratio of glyphosate (a.e. basis) to pyridine analog herbicide (a.e. basis) is greater than 7.6:1 or 7:1 with any expectation of success. Jimoh therefore does not overcome the deficiencies of Hacker and claims 29-32, 36-39, 43, 44, 46-53 and 59 are non-obvious over their combination.

Jimoh is generally directed to liquid concentrate herbicidal emulsion compositions comprising a water soluble herbicide in an aqueous carrier phase and an oil soluble herbicide in a discontinuous phase. Jimoh addresses the problem of water-mediated chemical degradation

(hydrolysis) of the oil-soluble herbicides, and insulates the oil soluble herbicide from water contact thereby minimizing degradation.

(1) Jimoh teaches chemical incompatibility in a formulation

Jimoh expressly teaches away from combining glyphosate and an oil soluble herbicide as instantly claimed because he teaches that the oil soluble herbicide degrades in the presence of water unless formulated as an emulsion to protect the oil soluble herbicide.[10]

(2) Jimoh does not recognize the problem of antagonism between glyphosate and pyridine analog herbicides, and does not describe or suggest herbicide synergy or the absence of antagonism

Jimoh is directed to compositions formulated to prevent oil soluble herbicide degradation during storage; Jimoh says nothing about the effect of the co-herbicides on plants. Jimoh specification does not recognize the present antagonism problem, nor in any way suggest that the weight ratio of glyphosate to any co-herbicide, much less pyridine analog herbicides, overcomes antagonism in order to achieve both short-term and long-term plant control. Jimoh's examples are also silent regarding synergy or lack of antagonism. A combination of glyphosate and carfentrazone-ethyl (not a pyridine analog herbicide) was evaluated on plants (see Example 12), but those herbicides were not evaluated individually. Therefore, an expected efficacy against which synergy or antagonism could be measured cannot be calculated. Consequently, Jimoh's disclosure fails to describe or suggest synergy, preventing antagonism between glyphosate and a pyridine analog as instantly claimed, or that said compositions could achieve both early plant control symptomology and long term plant control.

(3) Jimoh attaches no importance to the weight ratio

Jimoh broadly describes a weight ratio of water-soluble herbicide to oil-soluble herbicide of 190:1 to 1:1, and 190:1 to 19:1 for some oil soluble herbicides (see Jimoh at paragraph [0038]). Looking to the examples for guidance, each exemplified composition is formulated at a ratio of glyphosate to carfentrazone-ethyl of about 190:1[11]. Because Jimoh is concerned with forming emulsions containing the oil soluble herbicides in a discontinuous phase thereby

[10] See Jimoh paragraphs [0006], [0008], [0009], [0011], [0012], [0016], [0049], [0050], [0052] and Example 11.

[11] Each example contains about 42 wt% IPA glyphosate (which is equivalent to about 31 wt% a.e. glyphosate) and about 0.18. wt% of 91.2% carfentrazone-ethyl (which is equivalent to about 0.164 wt%). A ratio of about 190:1 is calculated by (31)/(0.164).

isolating it from the aqueous carrier phase for the purpose of preventing degradation, one skilled in the art would assume that low oil soluble herbicide concentrations (i.e. a high ratio of water-soluble herbicide to oil soluble herbicide) would be preferred in order to both limit the solvent content and most effectively isolate the oil soluble herbicide from the aqueous phase, while at the same time maximizing the proportion of the aqueous carrier phase in order to provide high glyphosate concentration. As expressly taught by Jimoh, ratios of greater than 19:1 are preferred for some herbicides.

In view of Jimoh, one skilled in the art would have had no reason to limit the weight ratio of glyphosate to pyridine analog to at least 7.6:1 as required by claim 29, or at least 7:1 as required by claim 46, much less ratios of 8:1 to 15:1 as required by dependent claim 32 and 8:1 to 20:1 as required by dependent claims 36, 64, 65 and 67 for the purpose of avoiding antagonism with any expectation of success.

(4) The breadth of the Jimoh disclosure would not have lead one skilled in the art to make the dual selection of (i) glyphosate and a pyridine analog herbicide at (ii) a weight ratio of at least 7.6:1 or 7:1

Jimoh provides a broad disclosure of 52 possible water-soluble herbicides including glyphosate and the pyridine analog herbicides picloram, clopyralid and triclopyr. Twenty-one separate water-soluble herbicide genera are disclosed.[12] From among the 52 disclosed water soluble herbicides, the combination of glyphosate and picloram, glyphosate and clopyralid and glyphosate and triclopyr are but three out of a possible 1326 combinations of two water-soluble herbicides.

Picloram, clopyralid and triclopyr are not among the water soluble herbicides described in the last two sentences of paragraph [0028] as being particularly preferred (i.e., bialaphos, glufosinate, glyphosate and the imidazolinones imazameth, imazamethabenz, imazamox,

[12] (1) nitrophenylether (acifluorfen, fluoroglycofen, fomesafen); (2) unclassified (acrolein, bentazon, endothall, fenac); (3) triazole (amitrole); (4) carbamate (asulam); (5) benzothiazole (benzolin); (6) pyridine analog (clopyralid, triclopyr, picloram); (7) organophosphorus (bialaphos, fosamine, glufosinate, glyphosate); (8) uracil (bromacil); (9) nitrile (bromoxynil, ioxynil); (10) benzoic acid (chloramben, dicamba, 2,3,6-TBA,); (11) halogenated aliphatic (chloroacetic acid, dalapon, flupropanate, TCA); (12) phenoxyacetic (2,4-D, 2,4-DB, MCPA,); (13) phenoxybutyric (MCPB); (14) phenoxy propionic (dichlorprop, mecoprop); (15) pyrazole (difenzoquat); (16) quaternary ammonium (diquat, paraquat); (17) aryloxyphenoxypropionic (fenoxaprop); (18) arylalanine (flamprop); (19) dicarboximide (flumiclorac); (20) imidazolinone (imazamethabenz, imazamox, imazapic, imazapyr, imazaquin, imazethapyr); (21) amide (naptalam); (22) quinolinecarboxylic acid (quinclorac)

imazapic, imazapyr, imazaquin and imazethapyr). Nor does Jimoh provide any example for the combination of glyphosate and a pyridine analog herbicide.

Thus, Jimoh does not suggest a preference for the selection of the instantly claimed herbicide combinations from among the 1326 possible combinations encompassed by the broad disclosure. Nor does Jimoh suggest a preference for the selection of the instantly claimed pyridine analog herbicide genus from among the other 21 genera. Jimoh therefore provides no reason for one skilled in the art to select the narrow specific combination of glyphosate and picloram, clopyralid or triclopyr from among the innumerable possible combinations of water soluble herbicides.

Jimoh provides a broad disclosure of 192 oil soluble herbicides including dithiopyr and thiazopyr. That disclosure includes a large number of genera of water-insoluble herbicides as compared to the claimed selection of one water insoluble herbicide genus. From among the list of 9 preferred water-soluble herbicides (including glyphosate) disclosed at paragraph [0028] as being particularly preferred, the combination of glyphosate and dithiopyr or glyphosate and thiazopyr are but two out of 1719 possible combinations of a water-soluble and water-insoluble pesticide. Nor does Jimoh provide any example for the combination of glyphosate and a pyridine analog herbicide. Jimoh therefore provides no reason for one skilled in the art to select the narrow specific combination of glyphosate and a pyridine analog from among the innumerable possible combinations of water soluble herbicides and water insoluble herbicides.

In view of the inadequate guidance provided by the Jimoh specification and examples, alone or in combination with Hacker, the unpredictability in the art, Hacker's teaching of incompatibility, Jimoh's teaching of antagonism, and what is known to those skilled in the art regarding glyphosate-pyridine analog antagonism, one skilled in the art would not have had any reason to make the instantly claimed dual selection of (i) glyphosate and a pyridine analog (ii) at the claimed with ratio with even the most remote expectation of success.

(5) Inherency cannot serve as the basis for an obviousness rejection

As pointed out above, the claims cannot be obvious over Jimoh, singularly or in combination with Hacker, under the doctrine of inherency.

(6) Claims 29-32, 36-39, 43, 44, 46-53 and 59 are non-obvious over Jimoh

In summary, Jimoh, singularly or in combination with Hacker, does not teach, suggest or attach any importance to, or provide any reason to, make the instantly claimed dual selection of (i) glyphosate and a pyridine analog herbicide at (ii) a weight ratio of 7.6:1 or 7:1 for the purpose of overcoming herbicidal antagonism with any expectation of success. Claims 29-32, 36-39, 43, 44, 46-53, 59 and 62 are therefore patentable over Jimoh and Hacker.

(7) Claim 62 is non-obvious over Jimoh and Hacker

Jimoh, like Hacker, would not have provided a reason to make the dual selection of (i) glyphosate and a pyridine analog herbicide for (ii) killing or controlling the plant specie required by claim 62 with any expectation of success. Jimoh therefore does not overcome the deficiencies of Hacker, and claim 62 is non-obvious over their combination.

As explained above, the breadth of Jimoh's disclosure does not suggest a preference for the combination of glyphosate and a pyridine analog herbicide from among the innumerable combinations disclosed therein, nor does Jimoh provide any examples of that combination. Hacker and Jimoh both expressly teach incompatibility, and Hacker's example showing incompatibility between a phosphoherbicide (glufosinate) and the pyridine analog herbicide clopyralid, in combination with the unpredictability in the art, would not have motivated one skilled in the art to select the claimed herbicide combination from among the numerous possible combinations disclosed therein for the control of plants with any expectation of success.

Jimoh describes the application of glyphosate compositions to kudzu at paragraph [0076] from among a listing covering over 100 plant species at paragraphs [0074] to [0078]. Because Jimoh and Hacker do not suggest any preference for combinations of glyphosate and a pyridine analog herbicide, Jimoh would not have motivated one skilled in the art to make the dual selection of (i) the combination of glyphosate and a pyridine analog herbicide and (ii) kudzu from over 100 plant specie with any expectation of success. Claim 62 is therefore non-obvious over Jimoh and Hacker.

3. Brigance

Brigance is directed to the problem of eye-irritation associated with certain surfactants used in pesticide compositions. Brigance solves the problem by formulating the pesticide with a

mixture of a polyoxyalkylene aliphatic amine surfactant, a mixture of polyhydric alcohols and a metal-complexing carboxylic acid.

Brigance at paragraph [0018] describes 17 exemplary herbicides including glyphosate and picloram resulting in 136 possible combinations of herbicides. Of those herbicides, only glyphosate is described as preferred; no preference for picloram or a mixture of picloram and glyphosate is described or suggested. Thus the instantly claimed combinations are not among Brigance's preferred embodiments.

The claim element directed to the weight ratio of glyphosate to pyridine analog is missing from Brigance. Brigance therefore does not teach, suggest or attach any importance to weight ratios between co-herbicides, much less the selection of glyphosate and picloram wherein glyphosate is in excess on a weight percent a.e. basis.

Brigance does not recognize that co-formulations of glyphosate and pyridine analog herbicides can be antagonistic when the pyridine analog herbicide is in weight percent excess, nor does Brigance even remotely suggest combining glyphosate and pyridine analog herbicides for the purpose of obtaining both early symptoms of plant treatment that are associated with the pyridine analog herbicide and prolonged control of the plant associated with glyphosate.

Brigance's examples are directed solely to glyphosate and therefore provide no guidance regarding glyphosate and pyridine analog herbicide combinations, such as a synergistic effect.

Brigance therefore adds nothing to Hacker and Jimoh and does not overcome the deficiencies of those references.

As pointed out above, the claims cannot be obvious over Brigance, singularly or in combination with Hacker and Jimoh, under the doctrine of inherency.

Claim 62 is likewise non-obvious over the combination with Hacker, Jimoh and Brigance. Brigance does not describe any of the claim 62 plant species and adds nothing to Hacker and Jimoh regarding the claimed combination of glyphosate and a pyridine analog. Therefore, one skilled in the art would not have been motivated to make the dual selection of (i) glyphosate and a pyridine analog and (ii) the plant specie with any expectation of success.

4. Conclusion

Applicants respectfully submit that claims 29-32, 36-39, 43, 44, 46-53, 59, 62 and new claim 65, are nonobvious under 35 USC §103(a) over Hacker, Jimoh and Brigance. Withdrawal of the rejection and allowance of the claims is respectfully requested.

III. New claims 63, 64, 66 and 67 are non-obvious over the combination of Hacker, Brigance and Jimoh

Claims 63 and 66 depend from claims 29 and 46, respectively, and are directed to a pyridine analog Markush group consisting of triclopyr, fluroxypyr, dithiopyr, thiazopyr and picloram, thereby excluding clopyralid from the scope of the claims. Claims 64 and 67 further limit claims 63 and 66, respectively, to a weight ratio of glyphosate to pyridine analog of from about 8:1 to about 20:1.

Claims 63, 64, 66 and 67 exclude clopyralid thereby removing Hacker as a reference.[13]

Claims 63, 64, 66 and 67 are non-obvious over Jimoh and Brigance. As explained above, Jimoh would not have led one skilled in the art to make the dual selection of (i) glyphosate and a pyridine analog herbicide at (ii) a weight ratio of at least 7.6:1 or 7:1, and Brigance does not overcome the deficiencies of Jimoh.

Claims 64 and 67 provide a further basis for non-obviousness because Jimoh, as explained above, does not describe or suggest the selection of a weight ratio of glyphosate to pyridine analog of from about 8:1 to about 20:1 from a broad range of 1:1 to 190:1, preferably 19:1 to 190:1. Brigance is silent on any weight ratio.

Applicants respectfully submit that new claims 63, 64, 66 and 67 are nonobvious under 35 USC §103(a) over Jimoh and Brigance for the same reasons that claims 27 and 46 are patentable, and by the additional weight ratio range that they introduce. Allowance of the claims is respectfully requested.

[13] The case law is clear that *prima facie* obviousness cannot be predicated on prior art that fails to disclose or suggest a claim feature. See *CFMT, Inc. v. Yieldup International Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974) (obviousness requires ***a suggestion of all limitations*** in a claim).

The Commissioner is hereby authorized to charge any underpayment and/or credit any overpayment of government fees in connection with this response to Deposit Account No. 19-1345.

Respectfully submitted,

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